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ABSTRACT

Due to recent political changes in Latvia, it has been possible to conduct national comparative studies that may result in reforming the educational system. The first national survey in the field of education was the International Association of Educational Achievement (IEA) Reading Literacy Study. This study was done in Latvia as a parallel to national studies using IEA instruments. The results of word recognition scores are discussed in this paper. With a word recognition score of 70.5%, Latvia is among the low-scoring countries. This article also describes reading comprehension of Latvian students at the ages of 9 and 14 years. Results show that 9-year-old students perform relatively better than 14-year-olds. Regional differences in reading comprehension in Latvia were also observed. Students from the western part of the country have the lowest level in reading achievement. Reading comprehension is explored in different contexts, such as gender differences and teaching strategies. Two appendixes present student scores. (Contains five references, six figures, and six tables.) (Author/SLD)

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Reading Achievement within the Educational System of Latvia: Results from the IEA Reading Literacy Study

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Paper presented at the annual conference of the American Educational Research Association, San Francisco, April 1995.

Abstract

Due to recent political changes in Latvia, it has been possible to conduct national comparative studies which hopefully will result in reforming the educational system. The first National survey in the field of education was the IEA Reading Literacy Study. This study in Latvia was done as a parallel to national studies using IEA instruments. The results of word recognition scores are discussed in this paper. With a word recognition score of 70.5% Latvia, is among the low scoring countries. This article describes reading comprehension of Latvian students at the age of nine and fourteen years respectively. The results show that nine year-old students perform relatively better than fourteen year-olds. Regional differences in reading comprehension in Latvia were also observed. Students from the Western part of the country have the lowest level in reading achievement. This paper explores reading comprehension in different contexts such as gender differences and teaching strategies.

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Introduction

On May 4, 1990 Latvia declared its independence and from August 1991 regained its sovereign status. These political changes influenced the educational system in the country. Presently one of the main tasks in Latvia is to reform the educational system. It seems advisable at this stage of development in Latvia to take advantage of research hitherto unavailable on the scientific analyses of curricula, such as the work done during the last four decades by the International Association of Educational Achievement (IEA). The IEA has taken as its mission to conduct comparative studies focusing on educational policies and practices and to enhance learning within and across systems of education.

The IEA Reading Literacy study in Latvia was undertaken in Spring, 1992 (one year later than in other countries). This survey in Latvia was done as a national study using the IEA instruments only for the Latvian part of the population. The main data collection for Population A in Latvia was conducted in April, 1992, and for Population B in late May, 1992. Latvia had not participated in the pilot study and in the other activities of preparing the international instruments. Latvia was also not included in any of the international reports.

Aims

The purpose of the study was to investigate student reading comprehension within the current system of compulsory education in Latvia. The specific aims of this study were to determine:

— student word recognition skills at the age of nine years,

— student reading comprehension at the age of nine and fourteen years by gender and by different areas in Latvia,

— the influence of teaching strategies on reading performance.

Methodology

Subjects

A representative sample of students was drawn for the IEA Reading Literacy Study in Latvia. Two age groups were examined: 957 nine-year old students (Population A) and 797 fourteen year-old students (Population B). The criteria for sampling were according to Ross (1991). In Latvia students from Population A were in Grade 3 and students from Population B in Grade 8. Figure 1 shows the areas of Latvia chosen as one of the stratification variables.

Instruments

Reading tests and student, teacher and school questionnaires were used. The reading tests were composed of passages representing narrative text, expository text and documents. For nine year-old students a Word recognition test was also included. Elley (1992) defines the text types used in the reading text.

The tests were administered by teachers according to the IEA Reading Literacy Study Manuals. Before the testing sessions were begun, training seminars were organized for teachers viz. the administrators of test for both populations. Teachers were warned that no assistance should be given to any student during the test.

For the statistical analysis of the Latvian data sets, SAS and SUDAAN software was used. For calculating standard errors SUDAAN sample design With Replacement was used. For Population B the stratum and school variables were used as Nest statements in the SUDAAN

runs. Stratum No 5 in Population A contains only one school. For this reason the region variable was used instead of the stratum variable for the Nest statements in the SUDAAN runs. This resulted in increasing the standard errors for Population A.

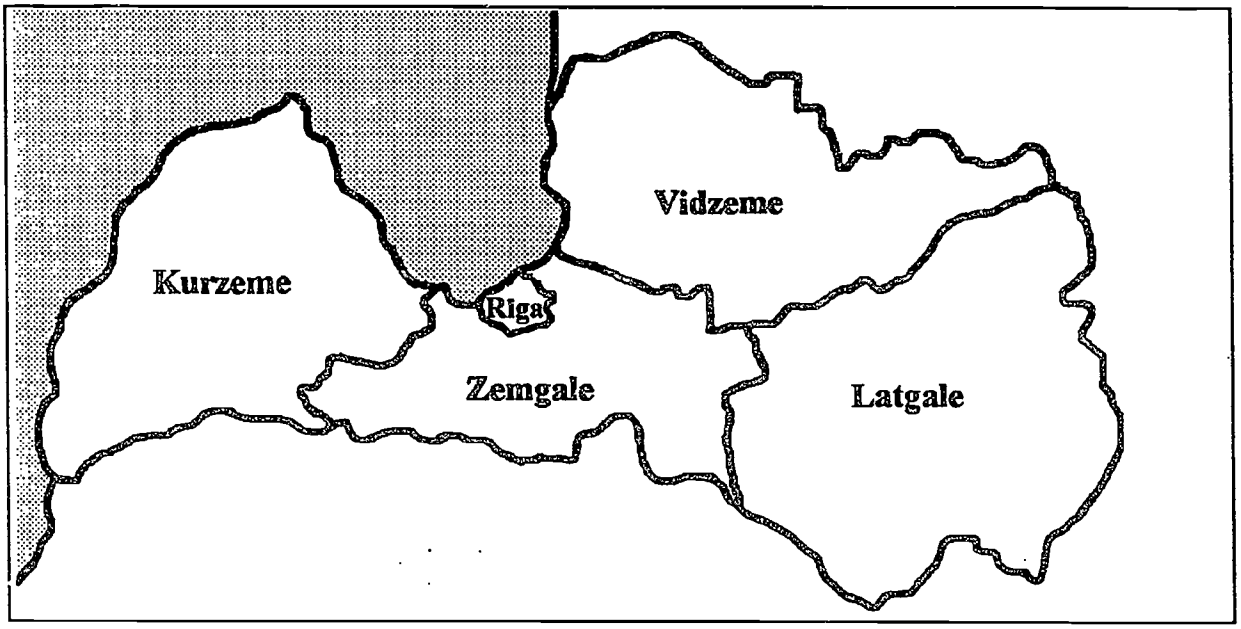

Figure 1. Map of Latvia

Results

Word recognition scores

The Word Recognition Tests include a series of a 40 familiar words, each of which was to be matched with one of four pictures in the limited time interval of one and a half minutes. The purpose of this test was to indicate the level of automation of nine years-old students. It might be fitting at this stage to restate the importance of word recognition skills: "Only if your ability to recognize and capture the meanings of the words on a page is rapid, effortless, and automatic will you have available the cognitive energy and resources upon which skillful comprehension depends. ... but, if readers' word recognition skill is not properly operative, they very likely will choose not to read at all" (Adams, 1991, p 5, p 4). According to Elley (1994) those who did not possess adequate decoding skills could not score highly. Skilled readers recognize words as wholes, they do not have analyze the word letter by letter.

Table 1 presents the mean word recognition scores of students from Latvia by gender. The mean score for boys is 27.7 and 28.9 for girls, the girls' score being slightly higher than that of the boys. Moreover, in figure 2, where the distribution of Word Recognition scores is presented, 12% of boys and almost 20% of girls reach all 40 of the possible points.

Table 1. Mean Student Word Recognition score by Gender, Population A, Latvia

	Number of Students	Mean score	s.e.	SD.
Boys	468	27.7	0.4	9.1
Girls	489	28.9	0.4	8.7

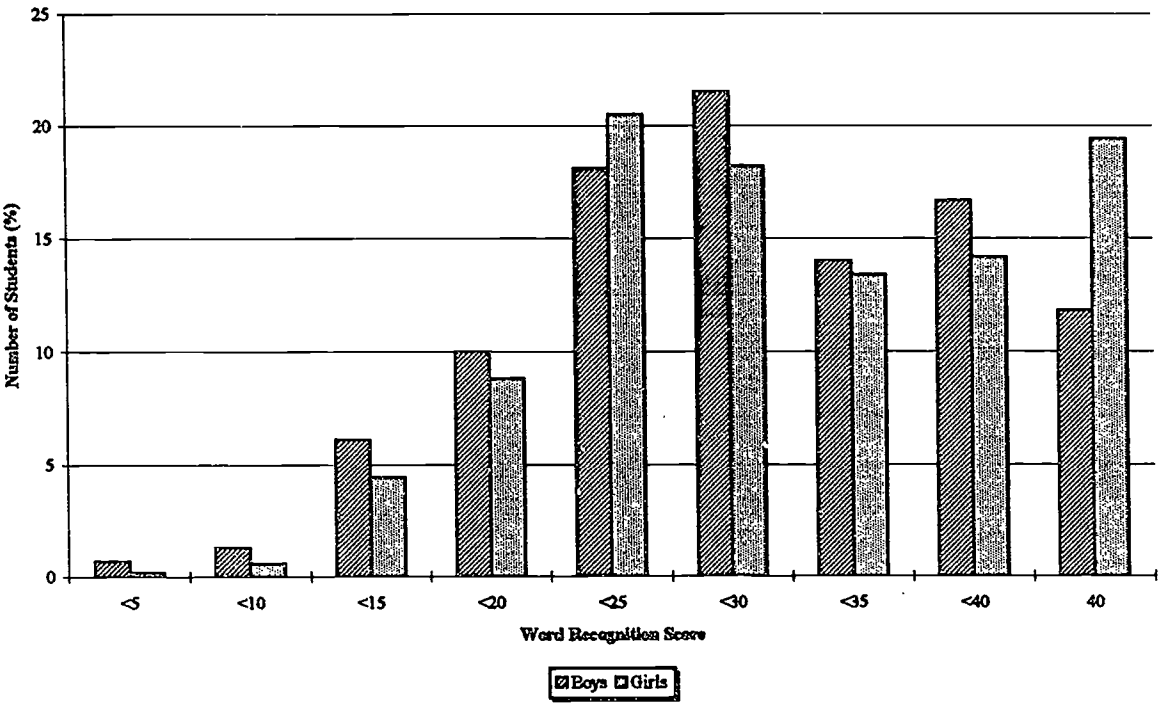

Figure 2. The Distribution of the Word Recognition Scores by Gender, Population A

The mean word recognition score for Latvian students is 28.3 of 40 possible points and in terms of percentages this is 70.5%. With that score Latvia is among the low scoring countries comparable to Indonesia (66.1%), Venezuela (67.8%), Denmark (72.7%), and East Germany (77.3%) Elley (1994). According to Elley (1994), no country has high reading achievement with low word recognition scores.

Reading Comprehension Scores

For the international scale with a mean of 500 and a standard deviation of 100, the Rasch scaling model was used. The overall mean reading ability score (503) for Latvian students from Population A is near the international mean (see Appendix 1). In the document domain, with a mean score of 535, Latvia occupies the fifth place and this is a very good result. Mean reading comprehension scores for Narrative (488) and Expository (486) prose are on the same level, but under the international mean. This signifies that students in Grade 3 have sufficient word recognition skills for reading passages in document the domain, but these skills are insufficient for succeeding in narrative and expository prose. The difference between the document and narrative domain, and the document and expository domain is statistically significant (α=0.025).

All the mean reading comprehension scores for Latvian students from Population B are under the international mean (see Appendix 2). The overall mean score was 481 points, with 489 points in the narrative domain, with 487 points in document domain and with 466 points in the expository domain. The difference between expository and narrative domain, and document and expository domain is statistically significant (α=0.05).

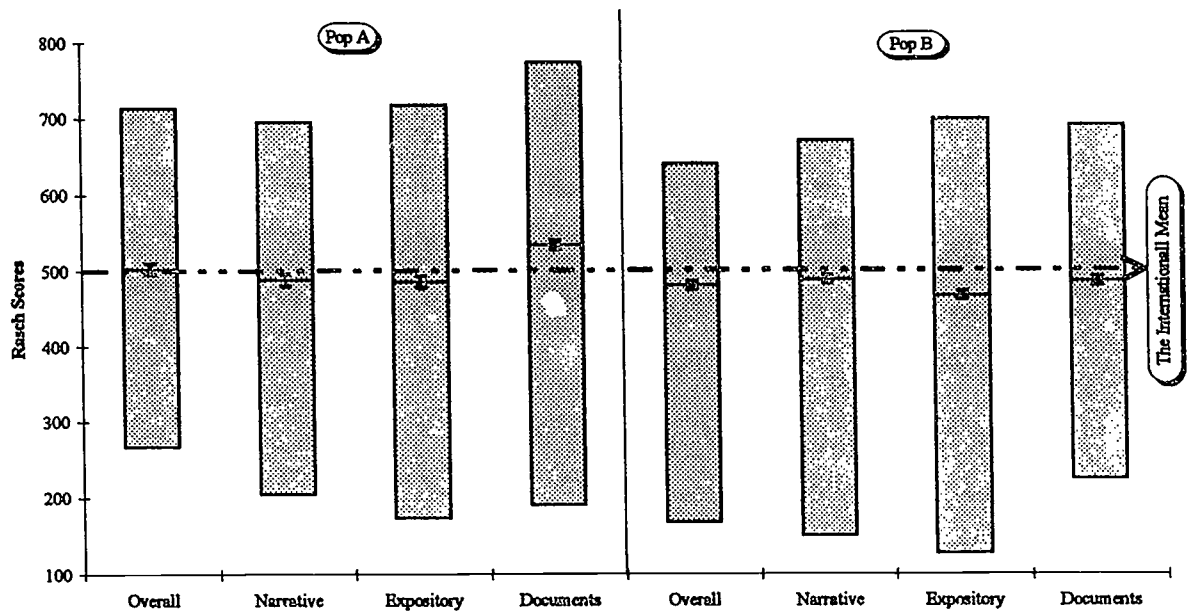

Figure 3. Means, Standard Errors, 1st and 99th Percentile of Rasch Scores for Latvia

Figure 3 presents means, standard errors, and the distribution of Rasch scores for both Population A and Population B. This shows that the document and overall scor s are the only scores above the international mean for Grade 3. It is also to be noted that low performance of Latvian students is approximately 200 is below the scores of high performing countries. All scores for Grade 8 are under the international mean. Low perf rming students have scores below 200, especially in the expository domain.

The data in table 2 shows differences in reading achievement for boys and girls. The overall difference favoring girls is 9 points. In the narrative and expository domain girls have the largest difference of 11 and 14 points. In the document domain the equivalent difference is very small.

Table 2. Mean Rasch Scores by Gender, Population A, Latvia

	Number of	Overall			Narrative			Expository			Documents		
	Students	Mean	s.e.	SD	Mean	s.e.	SD	Mean	s.e.	SD	Mean	s.e.	SD
Boys	468	499	7.	87	483	7.7	87	479	8.8	109	534	9.6	99
Girls	489	508	7.	76	494	7.2	79	493	9.7	101	535	7.8	82
Difference		-9			-11			-14			-1		

The data in table 3 shows differences in reading achievement for boys and girls. The overall difference favoring girls is 9 points, the same as for Population A. In the narrative domain, girls

have the largest difference of 15 points. However, the small difference in the document domain for Population A is higher by 9 points for in girls of Population B.

Table 3. Mean Rasch Scores by Gender, Population B, Latvia

	Number of Students	Overall			Narrative			Expository			Documents		
		Mean	s.e.	SD	Mean	s.e.	SD	Mean	s.e.	SD	Mean	s.e.	SD
Boys	346	476	6.2	64	481	7.2	79	465	6.9	71	482	6.1	73
Girls	433	485	6.4	57	496	7.8	71	469	5.9	65	491	6.3	59
Difference		-9			-15			-4			-9		

The data in Figure 4 shows the overall reading ability scores for boys and girls for both age groups. It is obvious that girls perform better than boys and Population A better than Population B. However, at the bottom level of overall scores there is almost no difference between boys and girls for Population A.

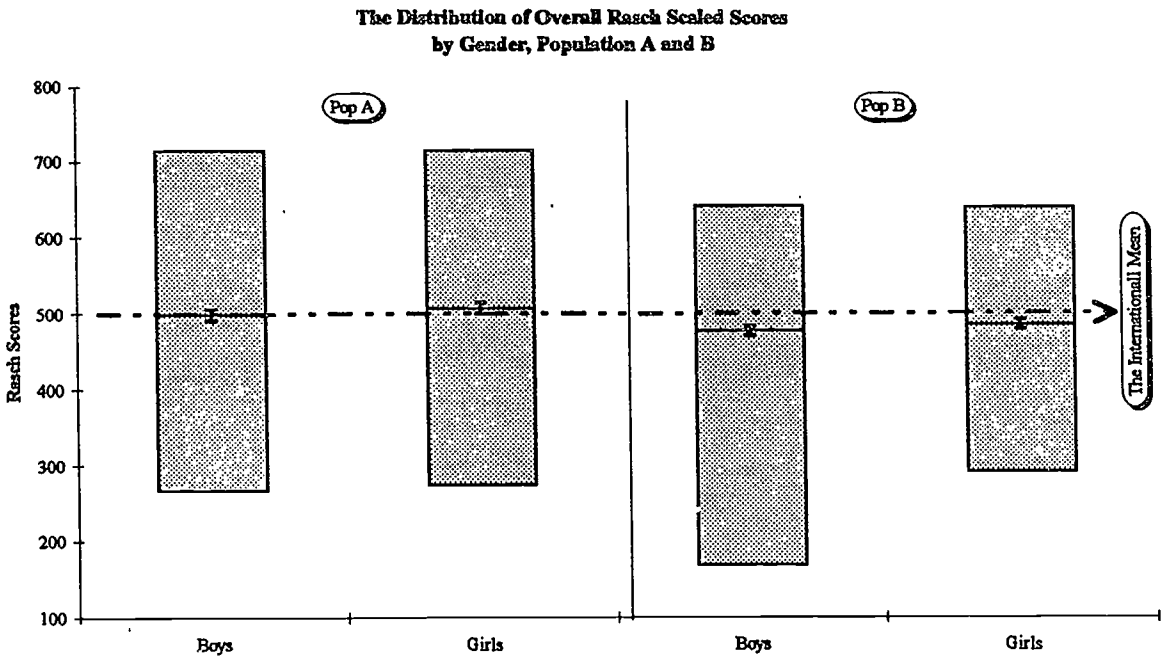

Figure 4. Means, Standard Errors, 1st and 99th Percentile Overall Rasch Scores by Gender, Latvia

Table 4 presents mean scores from different areas in Latvia for Population A. Evidently the lowest mean scores are for students from Kurzeme, the highest for students from Riga. It is remarkable that in the document domain the performance of students from all areas in Latvia was above the international mean.

Table 4. Mean Student Reading Comprehension Scores by Areas, Population A, Latvia

Area	Number of Students	Overall			Narrative			Expository			Documents		
		Mean	s.e.	SD	Mean	s.e.	SD	Mean	s.e.	SD	Mean	s.e.	SD
Kurzeme	223	479	15.3	78	469	11.4	74	455	18.4	06	515	17.6	88
Zemgale	199	495	13.3	01	484	11.0	98	478	16.7	24	523	14.7	113
Latgale	129	503	22.4	81	478	20.1	83	484	23.3	00	548	24.2	95
Vidzeme	221	506	10.8	68	489	10.1	73	493	12.1	92	537	14.1	77
Riga	185	544	13.6	63	531	12.9	72	536	13.6	83	565	19.3	73

Table 5 presents mean scores from different areas in Latvia for Population B. The lowest mean scores are for students from Kurzeme, the highest scores once again for students from Riga. It is remarkable that in the document domain only students from Riga achieved above the international mean.

Table 5. Mean Student Reading Comprehension Scores by Areas, Population B, Latvia

Area	Number of Students	Overall			Narrative			Expository			Documents		
		Mean	s.e.	SD	Mean	s.e.	SD	Mean	s.e.	SD	Mean	s.e.	SD
Kurzeme	163	472	12.0	69	484	11.8	3	455	10.4	79	478	14.3	71
Zemgale	191	481	4.9	50	489	8.5	9	471	4.7	56	483	6.4	56
Latgale	89	485	8.9	58	503	7.0	9	470	12.6	66	480	12.3	68
Vidzeme	170	477	17.7	67	479	21.0	2	463	19.3	76	488	13.3	66
Riga	184	493	11.0	57	499	10.6	0	477	10.5	59	504	13.7	68

Figure 5 shows the overall reading ability scores for both age groups by different areas in Latvia. The low achievers from Population A in Riga have higher scores than their counterparts from elsewhere. The overall mean difference between Riga and Kurzeme (α=0.01), Riga and Zemgale (α=0.01), and Riga and Vidzeme (α=0.03) are statistically significant. Besides, there are the following statistically significant differences for the mean scores: for the narrative domain differences between Riga and all other areas ($\alpha \leq 0.03$); for the expository domain differences between Riga and Kurzeme, Zemgale, Vidzeme ($\alpha \leq 0.02$); for the document domain differences between Riga and Kurzeme ($\alpha \leq 0.05$). For Population B differences in scores within the different areas in Latvia of the text domain were not statistically significant in any.

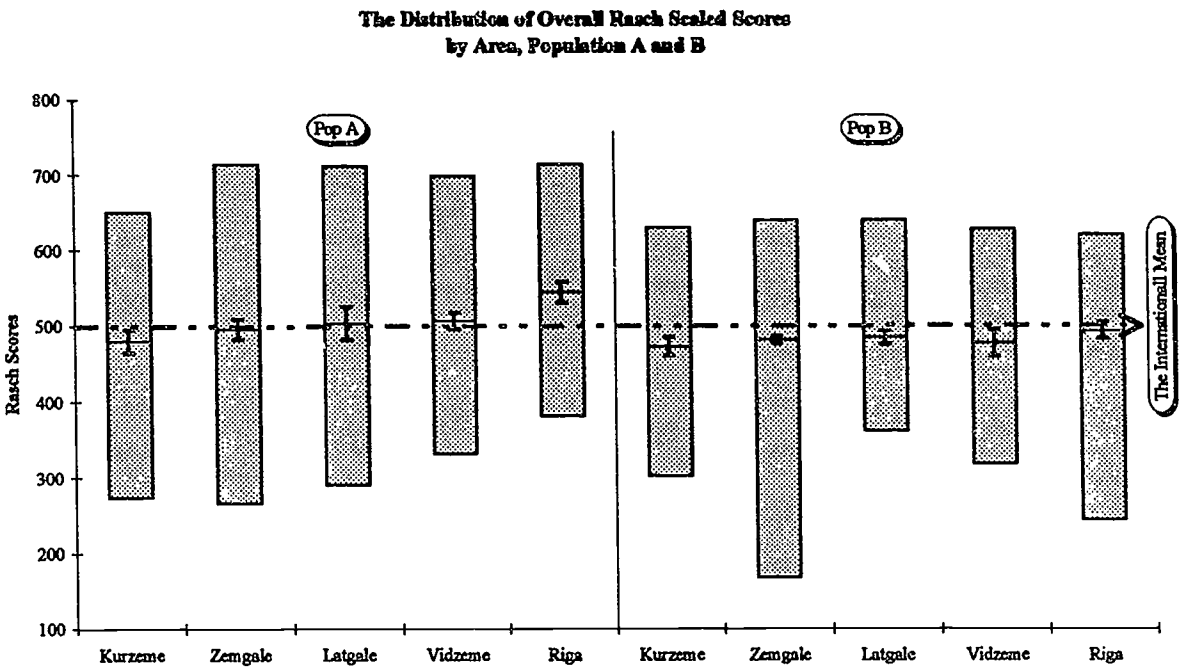

Figure 5. Means, Standard Errors, 1st and 99th Percentile Overall Rasch Scores by Area, Latvia

Different Age Groups

To investigate how age influences student performance, all students of Population A were divided into six age groups. The first group were students younger than 8 years and 9 months at the time of testing. This corresponds to a school entrance age of under 6 years and one month. Group No 6 consists students older than 9 years and 9 months which corresponds to a school entrance age of over 7 years and one month. Figure 6 presents the reading achievement mean scores within these age groups.

Students from groups No. 1-5 have higher reading comprehension scores than students from group No 6. The performance of the highest age group students was significantly lower than that of other students. The last group consists of students who entered school later than other students and of the pupils remaining for a second year in the same grade. There is confusion regarding school entrance age (6 - 7 years) with parents making decision as to when the child actually begins school. School entrance age is supposed to be in the period when a child has fulfilled 6 years but not yet reached 7. In practice, these limits are transgressed with some children beginning school before they are six (very seldom), whilst others are over 7 where they do so. The later reflect negative parents expectations. The results of Figure 6 show that a late school start is usually detrimental to the child.

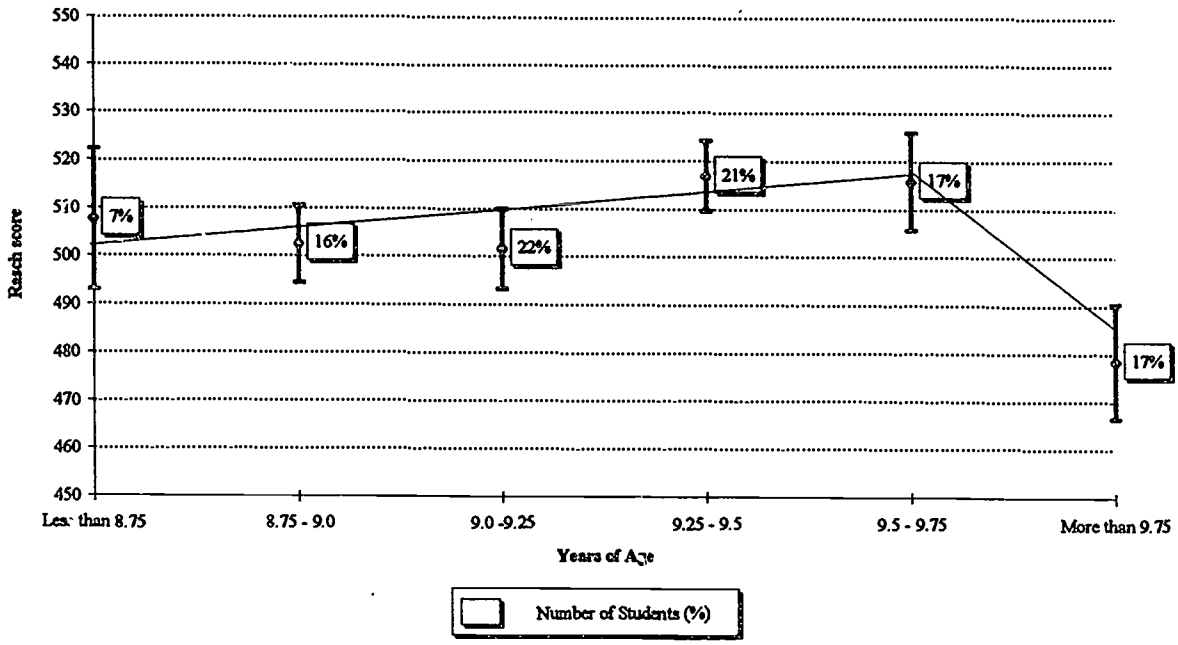

Figure 6. Reading Achievement Mean Scores within Different Age Groups, Population A, Latvia

Teaching Strategies

One of the questions in The Teacher questionnaire was how often teachers use narration, exposition and documents in their teaching strategies. They rated their answers on a 5-point scale from the following alternatives: almost never; 3 or 4 times a year; about once a month; at least once a week; nearly every day. Table 6 presents average time allocated to teaching of various text types.

Table 6. Average Time Allocated to Teaching of Various Reading Domains

		Narration	Exposition	Documents
Population A	International mean	3.5*	3.2*	2.6*
	Latvia	4.2	3.5	2.2
Population B	International mean	3.6*	3.3*	2.3*
	Latvia	3.3	3.5	2.4

*Source: Lundberg and Linnakylä (1993)

The table 6 reflects that for Population A in Latvia narration is thought with particularly high frequency compared to the international mean, whereas the frequency of document teaching is

low. For Population B, however, the means correspond more or less to their international means.

As mentioned by Lundberg and Linnakylä (1993), the ratio between document teaching and narration is an indicator of the relative stress teachers put on document teaching regardless of their general frequency bias. Across all countries this ratio is 0.75 in Population A and 0.64 in Population B which means that document teaching was in a somewhat stronger position in lower grades. For Latvia this ratio was 0.52 for Population A and 0.73 in Population B. This means that more attention was paid to document teaching in higher grades than in lower grades. Actually, in Latvia, this ratio rise from Population A to Population B is due to less teaching of narration rather than more frequent teaching of documents. A high correlation between the teaching of different text types and student reading achievement was found in both populations in Latvia.

Another significant issue regarding teaching strategies was homework assignment. Homework might give opportunity for students through practice to improve their reading skills. Teachers from Population A were asked about the frequency of assignment of homework, and the estimated time in which the homework could be completed. In Latvia the average teacher expects the student to work for about 20 minutes which is a relatively high expectation. On the other hand, students in Latvia state that they need almost 30 minutes to finish their home work. Lundberg and Linnakylä (1993) found no correspondence between the average expected time for homework and reading achievement for other countries. These results are also relevant for Latvia according to this study.

With regard to the frequency assigning homework, teachers of Population A from Latvia answered that they gave reading homework about four times per week. This is the highest frequency for all countries participating. Students from Population B estimated the frequency of homework assignment themselves. "A high frequency more than two times per week was reported in the developing countries and in the United States, Hong Kong, Italy and Cyprus. Countries with a low frequency of homework were the Netherlands, Iceland, Sweden, Norway and Finland. Thus, high-achieving and low achieving countries are found in both extreme groups" (Lundberg, Linnakylä, 1993). In Latvia students from Population B report that their homework assignment is more than four times per week. According to the data, the high frequency of homework assignment did not improve student reading comprehension in Latvia. Frequency of homework assignment and student reading achievement in Latvia did not correlated in either of the populations.

Conclusion

Nine-year old students on the average can read 28 of 40 simple words within the time limit of 1 minute and 30 seconds. Latvia, with a mean word recognition score of 70.5%, is among the low scoring countries. Further, in teaching of reading, more attention should be paid to automating word recognition skills.

Grade 3 students in Latvia showed the highest reading literacy level in the document domain. This was the fifth best result. However, in the narrative and expository domain, the reading literacy level is below the international mean.

Fourteen-year old students from Latvia performed below the international mean in the all three domains. Besides, Grade 8 students in Latvia showed lower reading comprehension scores

than Grade 3 students. The biggest differences between age groups were observed in the document domain. It seems that 9 year old students have a good background in reading literacy from their homes. This advantage diminishes through the years at school by the time they reach Grade 8.

Girls performed better than boys in word recognition and reading literacy tests in both Populations. Girls registered the best results in the expository domain for Grade 3 and in the narrative domain for Grade 8. In other countries girls performed better in the narrative domain.

Students from Kurzeme showed the lowest literacy level in both age groups. In all cases the differences between Kurzeme and Riga (the highest achievement area) were very significant.

Different age groups were investigated for Grade 3 students. If students entered school in their normal age group, they performed better than those who entered school later. For Latvia the normal age for the beginning of schooling for this study was between 6 and 7 years. The conclusion to be drawn from this is that homogeneity with regard to age is desirable.

The question about how often teachers use narration, exposition and documents in their teaching strategies was treated. Latvian teachers paid more attention to document teaching in higher grades.

The frequency of homework assignment and the time spent on homework was investigated. In Latvia, in both populations, the highest frequency of homework assignment from the all countries participating was registered. Unfortunately, this high frequency of homework did not improve student reading comprehension in Latvia. Frequency of homework assignment and student reading achievement in Latvia did not correlate in both populations. Besides, teachers from Population A underestimated the time which was necessary to complete homework.

Results such as these from the IEA Reading Literacy Study in Latvia in no way attempt to present a complete picture of the education system and its problems in a country at present coping with the problems off the yolk of communism and developing its own system of government. This represents, however, the only scientific study on reading achievement and teaching practices and no doubt will come as a surprise to many involved in the field of education, both as teachers and policy makers, a field that is seeped in tradition and bogged down in conservatism.

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Mean Student Reading Comprehension Scores Population A

	Country	Grade	Mean Age (in years)	Overall			Narrative			Expository			Documents		
				Mean	s.e.	SD	Mean	s.e.	SD	Mean	s.e.	SD	Mean	s.e.	SD
1	Finland	3	9.7	569	3.4	70	568	3.0	83	569	3.1	81	569	4.0	88
2	United States	4	10.0	547	2.8	74	553	3.1	96	538	2.6	80	550	2.7	81
3	Sweden	3	9.8	539	2.8	94	536	2.6	100	542	2.7	112	539	3.2	106
4	France	4	10.1	531	4.0	74	532	4.1	93	533	4.1	84	527	3.9	81
5	Italy	4	9.9	529	4.3	80	533	4.0	88	538	4.0	95	517	4.9	92
6	New Zealand	5	10.0	528	3.3	86	534	3.5	102	531	3.1	93	521	3.3	92
7	Norway	3	9.8	524	2.6	91	525	2.8	102	528	2.3	103	519	2.8	101
8	Iceland	3	9.8	518	0.0	85	518	0.0	95	517	0.0	101	519	0.0	91
9	Hong Kong	4	10.0	517	3.9	71	494	4.1	87	503	3.4	72	554	4.2	89
10	Singapore	3	9.3	515	1.0	72	521	1.1	91	519	1.0	75	504	1.0	78
11	Switzerland	3	9.7	511	2.7	83	506	2.6	92	507	2.7	100	522	2.8	96
12	Ireland	4	9.3	509	3.6	79	518	3.7	94	514	3.2	89	495	3.8	84
13	Belgium /FR	4	9.8	507	3.2	77	510	3.3	92	505	2.8	85	506	3.5	88
14	Spain	4	10.0	504	3.7	75	497	3.8	88	505	3.6	85	509	3.8	85
15	Greece	4	9.3	504	2.5	78	514	2.4	86	511	2.3	92	488	2.7	89
16	Germany /West	3	9.4	503	3.0	84	491	2.8	93	497	2.9	104	520	3.2	94
17	Latvia	3	9.3	503	6.8	82	488	5.8	83	486	7.8	106	535	8.0	91
18	Canada /BC	3	8.9	500	3.0	80	502	3.5	96	499	2.7	94	500	2.8	86
19	Germany /East	3	9.5	499	4.3	84	482	4.2	93	493	3.6	103	522	5.0	96
20	Hungary	3	9.3	499	3.1	78	496	2.9	80	493	3.1	101	509	3.5	89
21	Slovenia	3	9.7	498	2.6	78	502	2.7	94	489	2.5	93	503	2.5	82
22	Netherlands	3	9.2	485	3.6	73	494	3.3	85	480	3.4	87	481	3.9	82
23	Cyprus	4	9.8	481	2.3	77	492	2.4	92	475	2.3	91	476	2.1	81
24	Portugal	4	10.4	478	3.6	74	483	3.3	81	480	3.0	84	471	4.5	92
25	Denmark	3	9.8	475	3.5	111	463	3.4	119	467	3.5	127	496	3.6	125
26	Trinidad/Tobago	4	9.6	451	3.4	79	455	3.6	91	458	3.4	93	440	3.3	82
27	Indonesia	4	10.8	394	3.0	59	420	2.8	66	411	3.2	77	369	3.0	66
28	Venezuela	4	10.1	383	3.4	74	378	3.2	86	369	3.3	91	374	3.7	84

Source: Elly (1992)

Mean Student Reading Comprehension Scores Population B

	Country	Grade	Mean Age (in years)	Overall			Narrative			Expository			Documents		
				Mean	s.e.	SD	Mean	s.e.	SD	Mean	s.e.	SD	Mean	s.e.	SD
1	Finland	8	14.7	560	2.5	65	559	2.8	84	541	2.2	71	580	2.5	82
2	France	9	15.4	549	4.3	78	556	0.0	91	546	0.0	100	544	0.0	77
3	Sweden	8	14.8	546	2.5	92	556	5.7	104	533	5.7	105	550	5.3	98
4	New Zealand	10	15.0	545	5.6	80	547	2.6	93	535	2.4	91	552	2.4	90
5	Switzerland	8	14.9	536	3.3	73	534	3.1	81	525	3.6	91	549	3.2	82
6	Hungary	8	14.1	536	0.0	64	530	3.7	72	536	3.8	79	542	3.8	76
7	Iceland	8	14.8	536	3.2	76	550	4.8	88	548	4.7	83	509	5.3	90
8	Hong Kong	9	15.2	535	3.7	68	509	4.2	86	540	4.3	84	557	4.2	77
9	United States	9	15.0	535	4.8	60	539	2.5	71	539	3.4	79	528	3.4	67
10	Singapore	8	14.4	534	1.1	66	530	1.1	73	539	1.2	82	533	1.1	74
11	Slovenia	8	14.7	532	2.3	85	534	4.9	98	525	5.6	107	537	4.0	84
12	Germany /East	8	14.4	526	3.5	74	512	3.4	3	523	3.2	87	543	3.0	82
13	Denmark	8	14.8	525	2.1	73	517	3.9	90	524	3.5	87	532	2.9	81
14	Portugal	9	15.6	523	3.1	81	523	3.1	94	523	3.1	97	523	2.7	88
15	Germany /West	8	14.6	522	3.0	77	514	2.0	83	521	2.2	94	532	2.1	88
16	Canada /BC	8	13.9	522	4.4	78	526	4.9	95	51[illegible]	4.5	92	522	3.9	82
17	Norway	8	14.8	516	2.3	73	515	3.6	88	520	[illegible]	85	512	3.3	78
18	Italy	8	14.1	515	3.4	81	520	5.3	93	524	5.3	94	501	4.9	90
19	Netherlands	8	14.3	514	4.9	63	506	2.6	76	503	2.2	73	533	2.2	74
20	Ireland	9	14.5	511	5.2	71	510	2.1	76	505	2.4	86	518	2.4	82
21	Greece	9	14.4	509	2.9	65	526	2.9	75	508	3.1	84	493	2.6	69
22	Cyprus	9	14.8	497	2.2	65	516	3.0	84	492	2.6	79	482	2.0	64
23	Spain	8	14.2	490	2.5	87	500	1.7	96	495	1.8	100	475	1.7	92
24	Belgium /FR	8	14.3	481	4.9	73	484	2.2	82	477	2.4	91	483	2.0	74
25	**Latvia**	8	14.1	481	5.4	61	489	6.0	75	467	5.5	68	487	5.6	66
26	Trinidad/Tobago	9	14.4	479	1.7	79	482	6.6	88	485	5.9	87	472	6.2	88
27	Thailand	9	15.2	477	6.2	78	468	5.1	95	486	4.8	89	478	4.7	82
28	Philippines	8	14.5	430	3.9	65	421	3.6	71	439	4.1	78	430	3.9	72
29	Venezuela	9	15.5	417	3.1	61	407	2.9	67	433	3.3	80	412	3.0	70
30	Nigeria	9	15.3	401	-	65	402	-	69	406	-	73	394	-	81
31	Zimbabwe	9	15.5	372	3.8	60	367	3.3	64	374	3.6	70	373	4.6	83
32	Botswana	7	14.7	330	2.0	43	340	1.6	53	339	1.9	58	312	2.4	69

Source: Elly (1992).